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Declaration

I, Yuko Yagi, a member of Hayase & Co. patent attorneys of 13F, Nissay Shin-Osaka Bldg., 3-4-30, Miyahara, Yodogawa-ku, Osaka-shi, Osaka 532-0003 Japan, hereby declare that I am the translator of the attached document and certify that the following is a true translation to the best of my knowledge and belief.

Osaka, this 5th day of October, 2005

Yuko Yagi

Yuko Yagi

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[Inventor]

[Address] c/o Matsushita Electric Industrial Co., Ltd. 1006 Oaza Kadoma Kadoma-shi, Osaka JAPAN

[Name] Yoshinori Matsui

[Inventor]

[Address] c/o Matsushita Electric Industrial Co., Ltd. 1006 Oaza Kadoma Kadoma-shi, Osaka JAPAN

[Name] Kazuya Fujimura

[Applicant]

[Identification No.] 000005821

[Name] Matsushita Electric Industrial Co., Ltd.

[Deputy]

[Identification No.] 100097445

[Patent Attorney]

[Name] Fumio Iwahashi

[Selected Deputy]

[Identification No.] 100103355

[Patent Attorney]

[Name] Tomoyasu Sakaguchi

[Selected Deputy]

[Identification No.] 100109667

[Patent Attorney]

[Name] Hiroki Naito

[Representation of Fee]

[Ledger No.] 011305

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[Name of the Document] Description

[Title of the Invention] Data Playback Apparatus

[Claims]

[Claim 1] A data playback apparatus comprising a memory for holding audio or video compressively coded data, a decoding means for reading the compressively coded data stored in the memory, decoding the data, and outputting decoded data, and a display means for displaying the decoded data,

wherein said memory is divided into at least N (N: integer not less than 1) program data folders and a management data folder, and the program folder contains the compressively coded data while the management data folder contains management data including information relating to the N programs, and

said decoding means receives playback instruction data relating to an instruction of playback, selects at least one program folder with reference to the management data, and reads the compressively coded data stored in the selected program folder.

[Claim 2]

The data playback apparatus of Claim 1 wherein a decryption means is placed between the memory and the decoding means, said memory holds compressively coded data, at least a part of data of which is encrypted, said decoding

means requests the compressively coded data to the decryption means, said decryption means reads the requested compressively coded data from the memory, carries out decryption, and outputs the compressively coded data to the decoding means.

[Claim 3] The data playback apparatus of Claim 1 or 2 wherein the management data stored in the management data folder of the memory include information indicating the number of the program folders and information concerning each program folder, the number of which is equal to the number of the program folders.

[Claim 4] The data playback apparatus of Claim 1 or 2 wherein playback control data describing information to be used when controlling playback of each compressively coded data stored in the program folder of the memory is stored in the same program folder as the folder where the compressively coded data is stored, and the decoding means receives the playback control data and performs playback control.

[Claim 5] The data playback apparatus of Claim 3 wherein the management data include data protection information which is information concerning permission or inhibition of erasure of each program folder and data in the program folder.

[Claim 6] The data playback apparatus of Claim 1 or 2

wherein said decoding means receives erasure instruction data which are information concerning an instruction of erasure of a program, and erases a program folder designated by the instruction and data stored in the designated program folder.

[Claim 7] The data playback apparatus of Claim 6 wherein said decoding means refers to data protection information included in the management data when it receives the erasure instruction data, and when the data protection information of the designated program folder allows erasure, said decoding means erases the designated program folder and the compressively coded data stored in the program folder.

[Claim 8] The data playback apparatus of Claim 6 or 7 wherein said decoding means erases all data stored in the designated program folder.

[Claim 9]

The data playback apparatus of Claim 6 or 7 wherein said decoding means erases the designated program folder and all data stored in the program folder, updates the information indicating the number of the program folders, which is included in the management data, generates new management data in which information relating to the designated program folder is erased, and replaces the management data in the memory with the new management data.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention]

The present invention relates to a data playback apparatus for reading data from a memory containing media data such as video and audio which has been compressed according to a compression coding method such as MPEG, and decoding and playing the data.

[0002]

[Prior Art]

In recent years, with advances in the compression coding technology for media data such as video and audio, techniques for manufacturing optical disks and magnetic disks and recording/playback techniques, it has become possible to record the media data of several hours on the optical disk or magnetic disk, and play back the same. In the case of DVD (Digital Video Disc, or also called Digital Versatile Disc) which is now rapidly coming into wide use, a movie of about two hours can be recorded on an optical disk, using MPEG2 or the like as the compression coding method, and played back. In addition, it is expected that a DVD recorder having functions which are equivalent to those of a present VCR (Video Cassette Recorder) and are realized by an optical disk will be shortly brought out. Hereinafter, a data structure in the DVD recorder as a prior art of the data playback apparatus and the operation of the

recorder will be described.

[0003]

Figure 9 is a schematic diagrams for explaining a data structure in the DVD recorder (see "DVD Specifications for Rewritable/Re-recordable Discs Part3 VIDEO RECORDING Version1.0, September 1999").

[0004]

Figure 9(a) shows an entire data structure in a DVD, which is composed of a DVD_RTAV folder 901, a management data file 902, a movie data file 903, a still-picture data file 904, and audio data file 905. The DVD_RTAV is a folder which contains the files 902~905. The management data file 902 includes entire information of the DVD such as the title text and updated date, and information concerning each program included in the DVD. Here, the program is one playback unit, i.e., a broadcast program. For example, news, a baseball relay broadcast, a movie and the like are programs, respectively. The management data file includes the title, creation date, playback duration, start address of the movie data file and the like, as information concerning each of the programs. The movie data file 903 is a file which is obtained by concatenating plural programs. One example thereof is shown in figure 9(b). In this example, the movie data file is composed of three programs, i.e., a first program 9031, a second program 9032 and a third program 9033.

In the movie data file, as shown in figure 9(c), compressively coded data of audio and video are multiplexed in units referred to as "PACK". The size of a pack in the DVD recorder is fixed at 2048 bytes. In the still-picture data file 904, plural pieces of compressively coded still-picture data are multiplexed in units of pack. This is used as data for a slide show in which display images are switched at prescribed periods. In the audio data file 905, compressively coded audio data are multiplexed similarly in units of pack. This is for use on the postrecording to movie data.

[0005]

Figure 10 is a diagram for explaining an example of program playback when the second program 9032 shown in figure 9(b) is to be played. Address information for indicating from which byte in the movie data file 903 the playback is to be started is recorded in the management data file 902, for each program. Therefore, when the second program 9032 is to be played, start address information 1001 of the second program is initially extracted from the management data file 902 and, in accordance with this start address information, the reading position of the movie data file 903 is moved to a position indicated by the information. Then, the data are read out, whereby the playback can be started from the second program.

[0006]

In order to perform high-seed searching playback of a program or program searching playback, information of reading positions in the movie data file at intervals of about one second is included in the management data.

[0007]

Next, the program erasure in the DVD recorder is described with reference to figure 11. In figure 11, numeral 903 denotes a movie data file before program erasure, which is composed of three programs in this case. Assuming now that the second program 9032 is to be erased, the third program 9033 is concatenated immediately after the first program 9031, as shown by numeral 1103. Simultaneously, the information concerning the second program 9032 is also erased from the management data file.

[0008]

In the above descriptions, the outlines of the data structure in the DVD recorder and the operation for playing or erasing a program are given.

[0009]

[Problems to be solved by the Invention]

As described above, in the DVD recorder as the prior art data playback apparatus, the media data such as video and audio are recorded as a movie data file in which plural programs are concatenated. The object to concatenate

plural programs as one file is to make the best use of the capacity of a disc. However, in this data structure, following problems occur.

[0010]

Initially, it is required to extract start addresses of all programs to decide reading positions of the movie data file in the management data file, whereby the structure of the data playback apparatus is complicated. Further, when the number of programs is increased, there is a risk that the size of management data becomes enormous due to the start address information. In portable information terminals using MPEG4 as the latest media data compression coding technology, the coding bit rate of media data is assumed to be approximately 64~384 Kb/sec., which is some-tenths as large as the coding bit rate of a DVD using MPEG2, or smaller. Further, in the portable information terminals, it is assumed to obtain media data by radio communication. It is expected that the playback time of one program becomes relatively short, for example, approximately some dozen seconds to some minutes, to suppress the communication charges. Therefore, there is a possibility that the number of programs recorded on one disc is substantially increased.

[0011]

In addition, on the erasure of a program, a process

of concatenating unerased programs to recreate a movie data file is required. Since the portable information terminal uses a secondary battery such as a lithium ion, the above-mentioned program concatenation/recreation processing reduces the utilization time at one charge, thereby decreasing the user's operability.

[0012]

It is an object of the present invention to provide a data playback apparatus which improves a file structure and carries out a processing in accordance with the file structure.

[0013]

[Measures to solve the Problems]

A data playback apparatus according to the present invention (Claim 1) is a data playback apparatus comprising a memory for holding audio or video compressively coded data, a decoding means for reading the compressively coded data stored in the memory, decoding the data, and outputting decoded data, and a display means for displaying the decoded data, wherein the memory is divided into at least N (N: integer not less than 1) program data folders and a management data folder, and the program folder contains the compressively coded data while the management data folder contains management data including information relating to the N programs, and the decoding means receives playback

instruction data relating to an instruction of playback, selects at least one program folder with reference to the management data, and reads the compressively coded data stored in the selected program folder.

[0014]

According to the present invention (Claim 2), in the data playback apparatus of Claim 1, a decryption means is placed between the memory and the decoding means, the memory holds compressively coded data, at least a part of data of which is encrypted, the decoding means requests the compressively coded data to the decryption means, the decryption means reads the requested compressively coded data from the memory, carries out decryption, and outputs the compressively coded data to the decoding means.

[0015]

According to the present invention (Claim 3), in the data playback apparatus of Claim 1 or 2, the management data stored in the management data folder of the memory include information indicating the number of the program folders and information concerning each program folder, the number of which is equal to the number of the program folders.

[0016]

According to the present invention (Claim 4), in the data playback apparatus of Claim 1 or 2, playback control data describing information to be used when controlling

playback of each compressively coded data stored in the program folder of the memory is stored in the same program folder as the folder where the compressively coded data is stored, and the decoding means receives the playback control data and performs playback control.

[0017]

According to the present invention (Claim 5), in the data playback apparatus of Claim 3, the management data include data protection information which is information concerning permission or inhibition of erasure of each program folder and data in the program folder.

[0018]

According to the present invention (Claim 6), in the data playback apparatus of Claim 1 or 2, the decoding means receives erasure instruction data which are information concerning an instruction of erasure of a program, and erases a program folder designated by the instruction and data stored in the designated program folder.

[0019]

According to the present invention (Claim 7), in the data playback apparatus of Claim 6, the decoding means refers to data protection information included in the management data when it receives the erasure instruction data, and when the data protection information of the designated program folder allows erasure, the decoding

means erases the designated program folder and the compressively coded data stored in the program folder.

[0020]

According to the present invention (Claim 8), in the data playback apparatus of Claim 6 or 7, the decoding means erases all data stored in the designated program folder.

[0021]

According to the present invention, in the data playback apparatus of Claim 6 or 7, the decoding means erases the designated program folder and all data stored in the program folder, updates the information indicating the number of the program folders, which is included in the management data, generates new management data in which information relating to the designated program folder is erased, and replaces the management data in the memory with the new management data.

[0022]

[Embodiments of the Invention]

(Embodiment 1)

A data playback apparatus according to the first embodiment of the present invention will be described. In this first embodiment, compressively coded media data such as audio and video recorded in a memory are stored as movie data files in their respective program folders. In addition, information such as the tile of each program and the number

of contained media data is stored as management data in a management data folder. The movie data file of each program folder is decoded/played in accordance with the information of the management data. Further, the erasure of the movie data file is performed in program units. When the file is divided in program units, the management of start address information of each program and the concatenation process for data files in the program erasure and the like, required by the prior art DVD recorder, are omitted in the data playback apparatus, whereby the structure of the apparatus is simplified. Hereinafter, the description is given with reference to the drawings.

[0023]

Figure 1 is a block diagram illustrating a structure of the data playback apparatus. The data playback apparatus 101 comprises a memory 102 for containing compressively coded media data and management data, a decoding means 103 for receiving a playback instruction signal/erasure instruction signal, receiving the media data in accordance with the management data stored in the memory, and decoding the media data, and a display means 104 for displaying the decoded media data.

[0024]

Figure 2 is a diagram for explaining the contents stored in the memory. Assume that circles show folders and

rectangles show files, respectively. The memory includes a route folder SDV 201 and, directly under this folder, a management data folder MGR_INFO (202) and program folders PRG001~PRGxxx (203~205) are stored. In the management data folder 202, an entirety identification data file 206 including title information of the entire SDV and the like, and a program management data file 207 including the total number of programs and title information of each program and the like are stored. Movie data files 1 and 2 (208 and 209) are stored in the first program folder PRG001, movie data files 3~5 (210~212) are stored in the second program folder PRG002, and a movie data file X (213) are stored in the N-th program folder PRGxxx.

[0025]

Figures 3(a) and 3(b) are diagrams for explaining the contents of the program management data file 207. Figure 3(a) shows entire program management data, in which the total number 301 of programs stored in the memory and information 302~304 concerning the respective programs and the like are recorded. Figure 3(b) shows contents of the information concerning each program, in which the data ID 305, the data size 306, the program ID 307, the program attribute 308, the total number 309 of movie data files, movie data file IDs 310~312 and the like are recorded.

[0026]

Figures 4 to 6 are flowcharts for explaining the program playback process and the program erasure process in the decoding means 103 shown in figure 1.

[0027]

Hereinafter, the program playback process in the data playback apparatus according to the first embodiment is described, initially with reference to figures 1 to 5.

[0028]

Initially, in step S401, the decoding means reads the program management data from the memory. This step is carried out, for example, immediately after the starting switch of the data playback apparatus is turned on. Next, in step S402, the decoding means enters the instruction signal input waiting state. Though not shown in figure 1, the instruction signal is input to the decoding means through the user interface of the data playback apparatus. When the instruction signal is input, the contents of the instruction signal are analyzes in steps S403 and S404. When the instruction signal is a program playback instruction signal (step S403), the process proceeds to a program playback process in step S405. On the other hand, when the instruction signal is a program erasure instruction signal (step S404), the process proceeds to a program erasure process in step S406.

[0029]

Figure 5 is a flowchart for explaining details of the program playback process (step S405). Initially, in step S501, a program ID (Gn) for an instructed program "n" is generated.

[0030]

The program ID generation method is previously programmed in the data decoding means. The ID is one for identifying a program folder or movie data file in the program management data, and corresponds to the program folder or movie data file in the memory in a one-to-one relationship. Since the ID is generated on the basis of the combination of the program folder and the movie data file, even if there are the same movie data file names, when their program data files are different from each other, the IDs are not the same. The ID can be for example an integer of 32 bits. The most significant 8 bits are for use on identification of either a folder or a file. The following 12 bits indicate a program folder number. The least significant 12 bits indicate a movie data file number in the case where the ID shows a file.

[0031]

Next, in step S502, a program ID which matches the program ID generated in step S501 is retrieved from the management data which are read in step S401. The information concerning each program contains the program

ID, as shown in figure 3(b) by numeral 307. Program information having this program ID which matches the generated program ID is information concerning the program to be played.

[0032]

Then, in step S503, variables i and M are prepared, and zero and the total number of the movie data files are set as the initial values, respectively. The total number of the movie data files is stored in the information concerning the program, as shown in figure 3(b) by numeral 309.

[0033]

In step S504, the variables i and M are compared each other, and when the variable i is smaller than the variable M, the process proceeds to step S505. On the other hand, when the variable i is equal to or larger than the variable M, the data playback process is finished, and the decoding means returns to the instruction signal input waiting state of step S402. Now, a description is given as an example of a case where the playback of PRG001 as the first program 203 in figure 2 is instructed. PRG001 contains two movie data files 206 and 207. Therefore, the total number of the movie data files is recorded as "2", and the variable M is set at "2".

[0034]

Next, in step S505, the first movie data file 206 is read, and then the media data such as compressively coded video and audio included in the file are successively decoded and output. The display means 104 displays these data. In this case, the two movie data files are played according to the order in which the movie data file IDs are arranged in figure 3(b).

[0035]

When the reading and decoding of the first movie data file is finished, "1" is immediately added to the variable i in step S506, and then the process returns to step 504 to compare the variables i and M. Since the variable M is "2" and the variable i is "1" now, because "1" has been added thereto, the process proceeds to step S505 and the second movie data file is read and decoded similarly.

[0036]

When the reading and decoding of the second movie data file is finished, "1" is immediately added to the variable i in step S506 and then the process returns to step S505 to compare the variables i and M. Since the variable M is "2" and the variable i is "2" now, the condition of step S504 does not stand and the process is finished.

[0037]

Next, the program erasure process in the data playback apparatus according to the first embodiment is described

with reference to figure 6.

[0038]

Initially, in step S601, a program ID (Gn) for an instructed program "n" is generated. This program ID is generated on the basis of the ID generation method as that described in step S501.

[0039]

Next, in step 602, a program ID which matches the program ID generated in step S601 is retrieved from the management data which are read in step 401. The information concerning each program contains the program ID, as shown in figure 3(b) by numeral 307. Program information having this program ID which matches the generated program ID is information concerning the program to be erased.

[0040]

Then, in step 603, the program attribute 308 shown in figure 3(b) is examined. The program attribute contains a protection flag indicating that the program is protected. When the protection flag is true, it is assumed that the program is protected and the erasure is inhibited. In this case, the condition of step S603 does not stand, and then the process is finished. That is, the erasure process is not carried out.

[0041]

When the protection flag is false, in step S604, the

program information concerning the program "n" is eliminated from the read-in program management data, then "1" is subtracted from the value of the total number 301 of programs, and the resultant is replaced with the management data in the memory.

[0042]

Then, in step 605, all files included in the folder of the program "n" are erased from the memory, and then the program folder "n" is also erased from the memory. The program erasing process by the decoding means of the data playback apparatus has been described above.

[0043]

In the above description, the data playback apparatus 101 according to the first embodiment of the present invention has been explained.

[0044]

In figure 1, the memory can have an installable/ removable structure. With this structure, a program which is previously recorded by another apparatus can be easily played.

[0045]

In this first embodiment, the program folders and the movie data files are identified by the IDs in the program management data file. However, the program folder names and the movie data file names can be recorded in place of the

IDs.

[0046]

In this first embodiment, the management data are stored in the management data folder MGR_INFO 202 shown in figure 2. However, the management data can be stored directly under the SDV 201 and the management data folder can be omitted.

[0047]

In addition, in this first embodiment, the program management data file contains the information concerning all programs. However, the information concerning each program as shown in figure 3(b) can be stored separately in each program folder.

[0048]

Further, in this first embodiment, in addition to the movie data file, a playback control file for each movie data file can be stored as data which are stored in the program folder. For example, playback start addresses of a movie data file at intervals of one second are recorded in the playback control file. When only video frame data at every one second are decoded by the decoding means 103 to perform high-speed playback, data of one video frame is successively read from the playback start address of the movie data file to be decoded, by using the playback control file, whereby the high-speed playback is realized. Further, even when the

user designates a playback start time in the program, the jump position can be also decided at high speed by using the playback control file. Further, the playback control data is not limited to files other than the movie data file, but this can have a file structure in which playback control data are multiplexed at the head or rearmost position of the movie data file.

[0049]

In this first embodiment, the file which is obtained by multiplexing compressively coded audio or video data is described as the movie data file. However, even files including compressively coded still pictures, text data and the like can be also processed by the data playback apparatus 101 of the first embodiment.

[0050]

Further, in this first embodiment, the data playback apparatus 101 is realized by hardware. However, the decoding means 103 of the data playback apparatus 101 can be realized by software. For example, the decoding means can be also realized in a computer system by using a software program which is programmed such that the processes in the decoding means 103 shown in figures 4 to 6 are carried out by a CPU (Central Processing Unit). Even when the data playback apparatus 101 of the first embodiment is realized by this software, the same effects as those in the first

embodiment can be obtained. The above-mentioned software program can be stored in a storage medium such as a floppy disk, an optical disk, a magnetic disk, an IC card, and a ROM cassette.

[0051]

(Embodiment 2)

A data playback apparatus according to the second embodiment of the present invention will be described with reference to figure 7. Figure 7 is a block diagram illustrating a structure of the data playback apparatus 701 of the second embodiment. The difference of the data playback apparatus 701 from the data playback apparatus of the first embodiment is that a decoding means 704 carries out reading of the media data via a decryption means 703. An encryption process is carried for at least part of the movie data files stored in a memory. The decryption means 703 outputs a movie data file which is obtained by decrypting an encrypted part of a movie data file read from the memory, as a movie data file requested by the decoding means 704 through the processes of the first embodiment.

[0052]

The structure of a memory 702, the processing of the decoding means 704, and the processing of a display means 705 are the same as those in the data playback apparatus according to the first embodiment.

[0053]

In this second embodiment, the decryption means 703 is between the memory 702 and the decoding means 704, and the decoding means 704 requests a movie data file from the decryption means 703. However, for example like a data playback apparatus 801 as shown in figure 8, a decoding means 804 can carry out the processing by reading an encrypted movie data file from a memory 802, thereafter outputting the encrypted movie data file to a decryption means 803, and inputting the movie data file which has been decrypted by the decryption means 803.

[0054]

[Effects of the Invention]

A data playback apparatus according to the present invention (Claim 1) is a data playback apparatus comprising a memory for holding audio or video compressively coded data, a decoding means for reading the compressively coded data stored in the memory, decoding the data, and outputting decoded data, and a display means for displaying the decoded data, wherein the memory is divided into at least N (N: integer not less than 1) program data folders and a management data folder, and the program folder contains the compressively coded data while the management data folder contains management data including information relating to the N programs, and the decoding means receives playback

instruction data relating to an instruction of playback, selects at least one program folder with reference to the management data, and reads the compressively coded data stored in the selected program folder. Therefore, start address information of each program in the management data is dispensed with, thereby facilitating access in program units. Consequently, the structure of the data playback apparatus can be simplified.

[0055]

According to the present invention (Claim 2), in the data playback apparatus of Claim 1, a decryption means is placed between the memory and the decoding means, the memory holds compressively coded data, at least a part of data of which is encrypted, the decoding means requests the compressively coded data to the decryption means, the decryption means reads the requested compressively coded data from the memory, carries out decryption, and outputs the compressively coded data to the decoding means. Therefore, even a program which includes media data that have been encrypted and stored in the memory can be played.

[0056]

According to the present invention (Claim 3), in the data playback apparatus of Claim 1 or 2, the management data stored in the management data folder of the memory include information indicating the number of the program folders

and information concerning each program folder, the number of which is equal to the number of the program folders. Therefore, the number of programs stored in the memory can be easily obtained and further the information depending on the program can be obtained collectively.

[0057]

According to the present invention (Claim 4), in the data playback apparatus of Claim 1 or 2, playback control data describing information to be used when controlling playback of each compressively coded data stored in the program folder of the memory is stored in the same program folder as the folder where the compressively coded data is stored, and the decoding means receives the playback control data and performs playback control. Therefore, the playback control data and the media data can be collectively erased on the erasure of the program folder, and consequently the structure of the data playback apparatus can be simplified.

[0058]

According to the present invention (Claim 5), in the data playback apparatus of Claim 3, the management data include data protection information which is information concerning permission or inhibition of erasure of each program folder and data in the program folder. Therefore, protection or non-protection for the program can be set by

the user.

[0059]

According to the present invention (Claim 6), in the data playback apparatus of Claim 1 or 2, the decoding means receives erasure instruction data which are information concerning an instruction of erasure of a program, and erases a program folder designated by the instruction and data stored in the designated program folder. Therefore, a program connecting process during program erasure is dispensed with, whereby the load of the data playback apparatus is reduced.

[0060]

According to the present invention (Claim 7), in the data playback apparatus of Claim 6, the decoding means refers to data protection information included in the management data when it receives the erasure instruction data, and when the data protection information of the designated program folder allows erasure, the decoding means erases the designated program folder and the compressively coded data stored in the program folder. Therefore, an erroneous erasure of the program by the user can be prevented.

[0061]

According to the present invention (Claim 8), in the data playback apparatus of Claim 6 or 7, the decoding means

erases all data stored in the designated program folder. Therefore, data created by the user independently, which cannot be recognized in the program folder by the data playback apparatus, can be erased.

[0062]

According to the present invention (Claim 9), in the data playback apparatus of Claim 6 or 7, the decoding means erases the designated program folder and all data stored in the program folder, updates the information indicating the number of the program folders, which is included in the management data, generates new management data in which information relating to the designated program folder is erased, and replaces the management data in the memory with the new management data. Therefore, the relationship between the management data and the program folder can always be held with accuracy.

[Brief Description of the Drawings]

[Figure 1]

A block diagram illustrating a structure of a data playback apparatus according to a first embodiment of the present invention.

[Figure 2]

A schematic diagram for explaining a structure of a file stored in a memory of the data playback apparatus of the first embodiment.

[Figure 3]

Schematic diagrams for explaining structures of a program management information file stored in a memory of the data playback apparatus of the first embodiment.

[Figure 4]

A flowchart for explaining an operation of a decoding means of the data playback apparatus of the first embodiment.

[Figure 5]

A flowchart for explaining a program playback process of the decoding means of the data playback apparatus of the first embodiment.

[Figure 6]

A flowchart for explaining a program erasure process of the decoding means of the data playback apparatus of the first embodiment.

[Figure 7]

A block diagram illustrating a structure of a data playback apparatus according to a second embodiment of the present invention.

[Figure 8]

A block diagram illustrating a structure of a data playback apparatus according to a second embodiment of the present invention.

[Figure 9]

A schematic diagram for explaining a file structure to be recorded on a memory of a prior art data playback apparatus.

[Figure 10]

A schematic diagram for explaining a program reproduction process of the prior art data playback apparatus.

[Figure 11]

A schematic diagram for explaining a program erasing process of the prior art data playback apparatus.

[Description of Reference Numerals]

101...data playback apparatus

102...memory

103...decoding means

104...display means

201...route folder

202...management data folder

203～205...program folder

206...identification data file

207...program management data file

208～213...movie data file

301...information field where total number of programs is recorded

302～304...information field where information relating to each program is recorded

305...information field where data ID is recorded

306...information field where data size is recorded

307...information field where program ID is recorded

308...information field where program attribute is recorded

309...information field where total number of movie data files is recorded

310～312...information field wherein ID of movie data file is recorded

701...data playback apparatus

702...memory

703...decryption means

704...decoding means

705...display means

801...data playback apparatus

802...memory

803...decryption means

804...decoding means

805...display means

901...route folder

902...management data file

903...movie data file

904...still picture data file

905...audio data file

9031～9033...program

1001...information field where program start address is

recorded

1103...movie data file

[Name of the Document] Abstract

[Summary]

[Object] It is an object to provide a data playback apparatus which efficiently performs reproduction and erasure of a program comprising video and audio data which is recorded on a memory card.

[Solution] A decoding means for reading data from a memory to decode the same retrieves an ID which matches a program ID designated by the user from a program file management data file, reads a movie data file in the folder of the designated program and decodes the same, with referring to the relevant program information.

[Selected Figure] Figure 5

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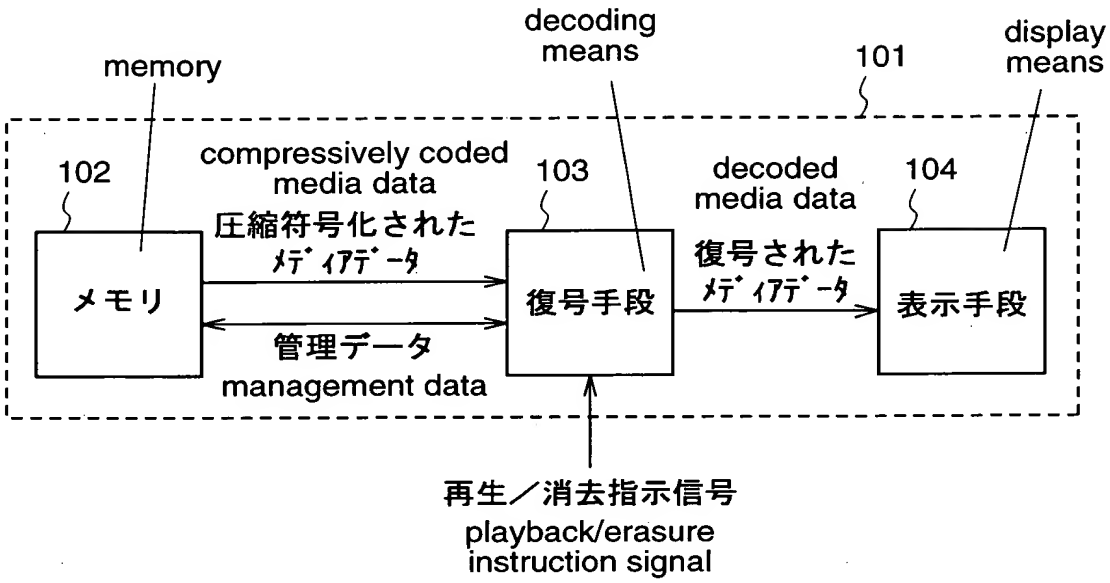
Name of Document
【書類名】　図面 Drawing
【図1】 Figure 1



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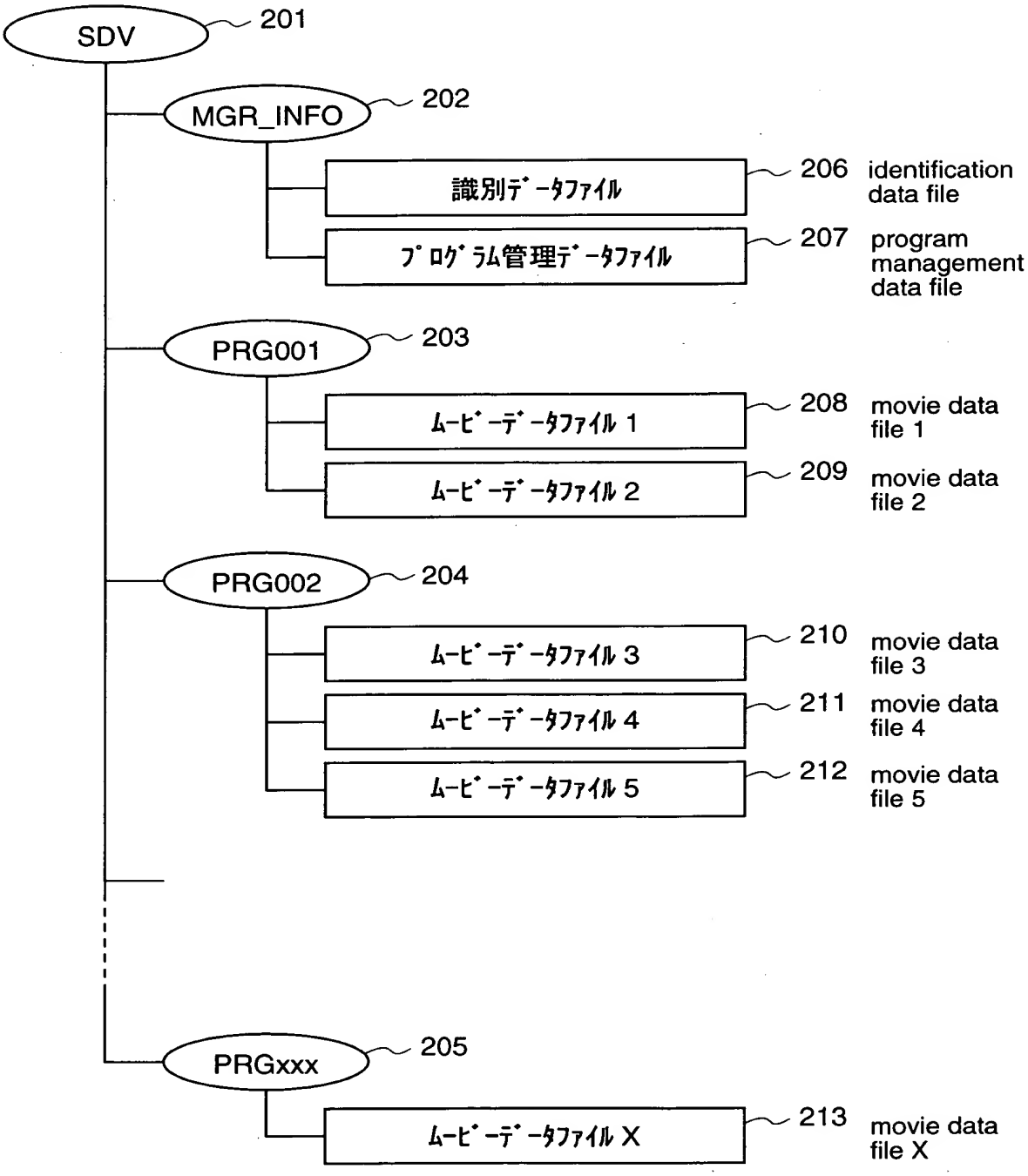
【図2】 Figure 2



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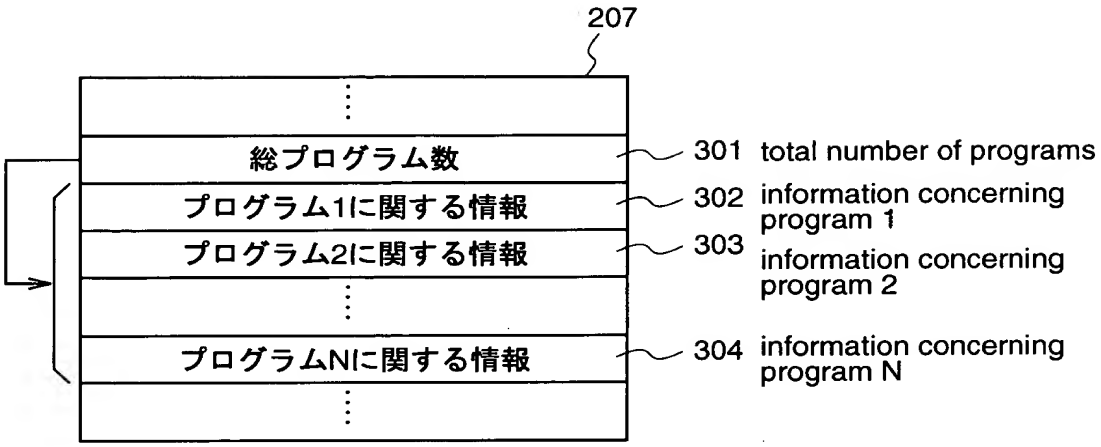
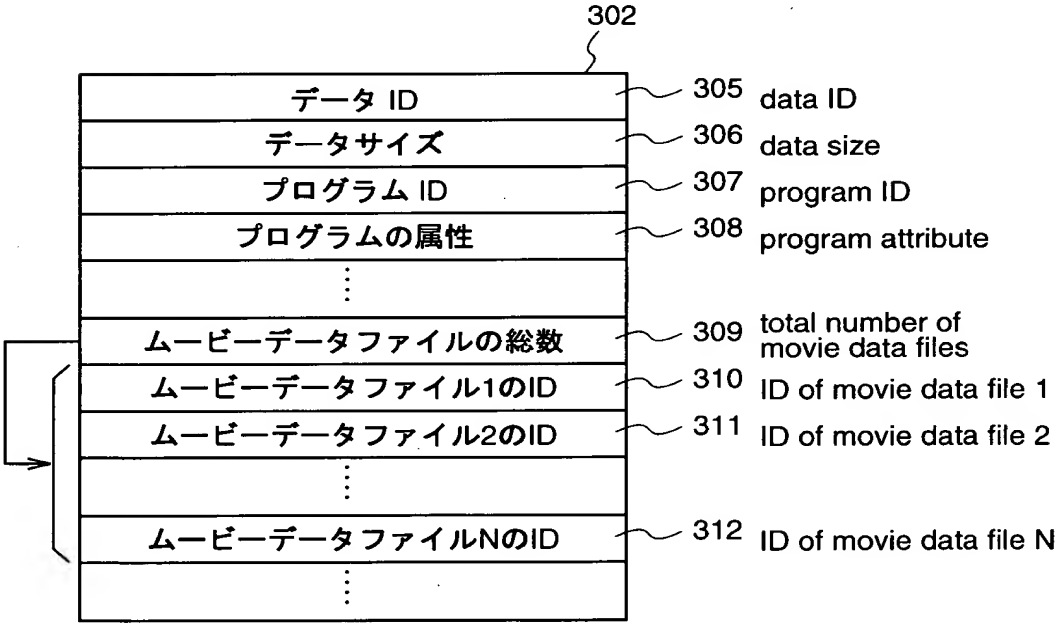
【図3】 Figure 3





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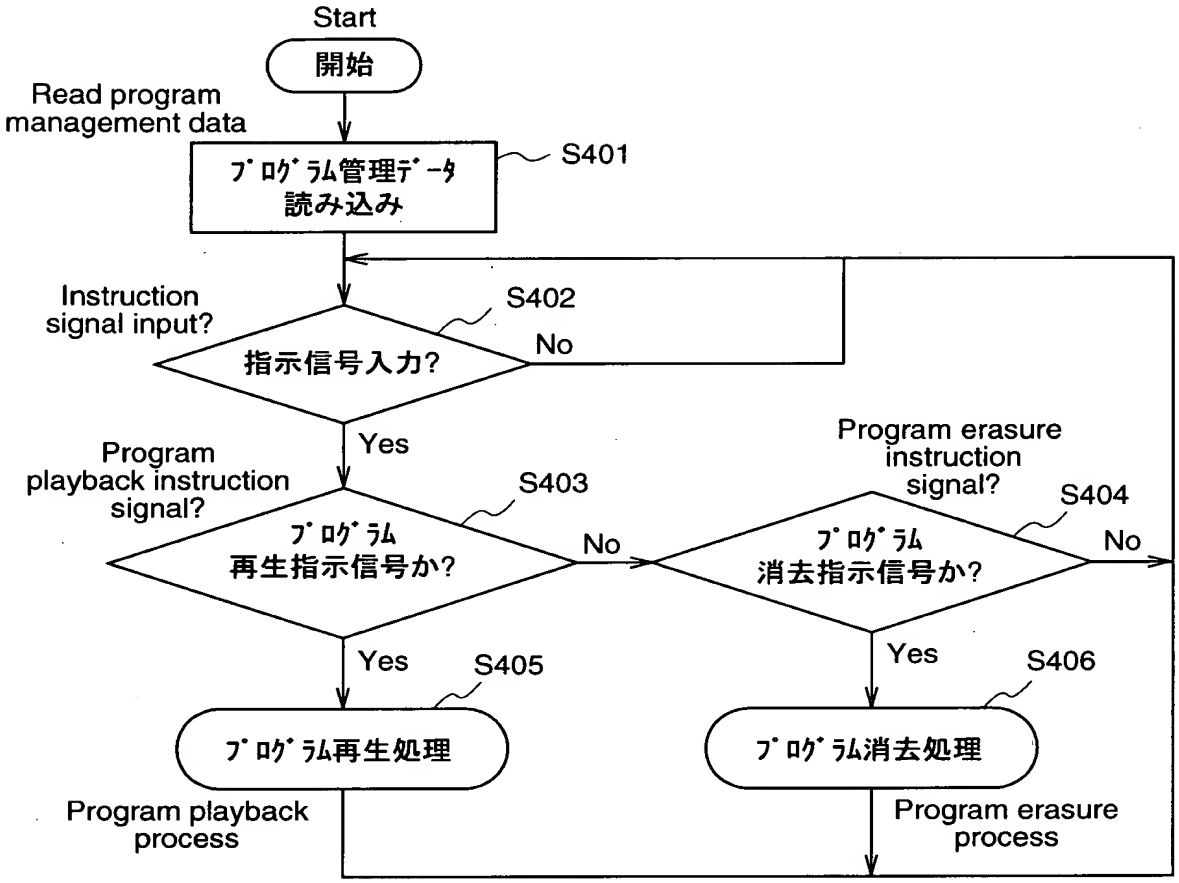
【図4】 Figure 4



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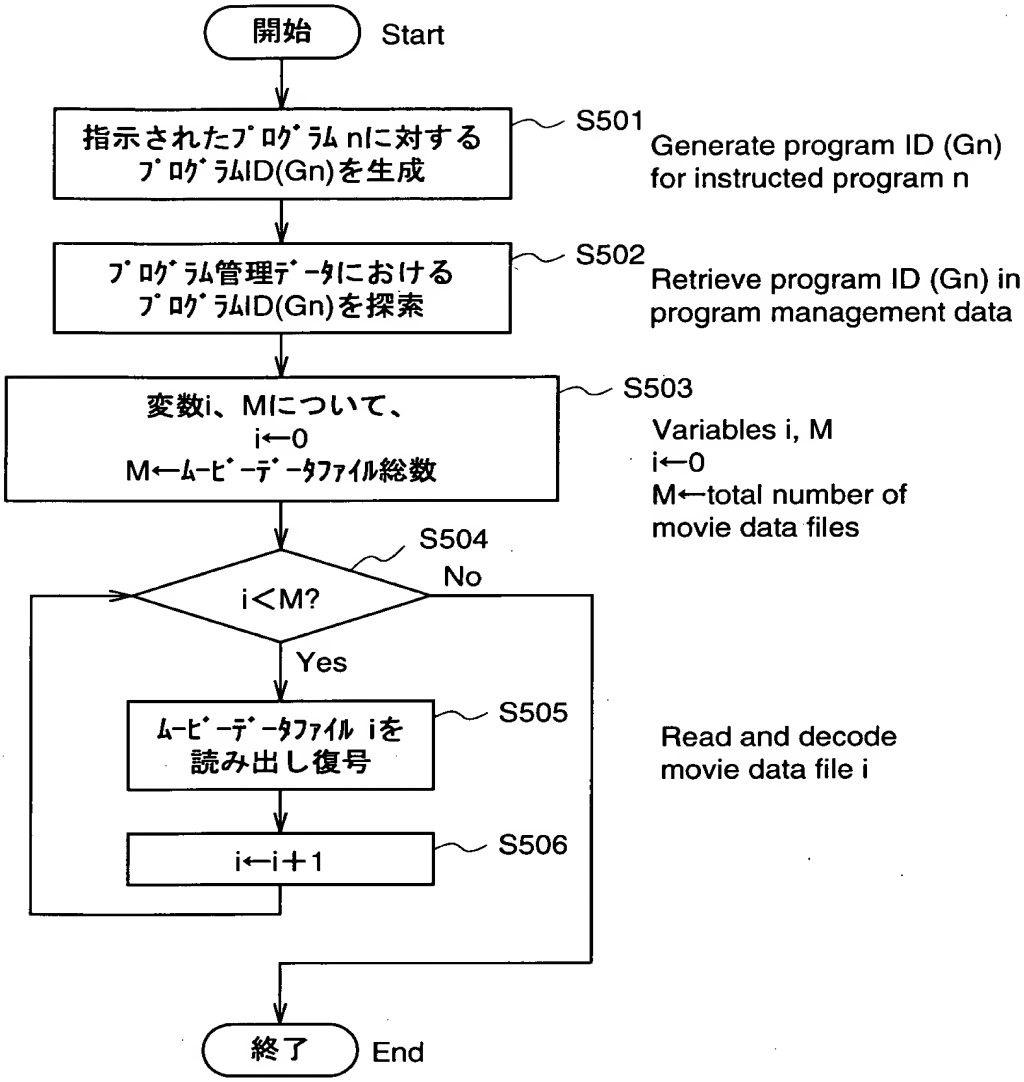
【図5】 Figure 5



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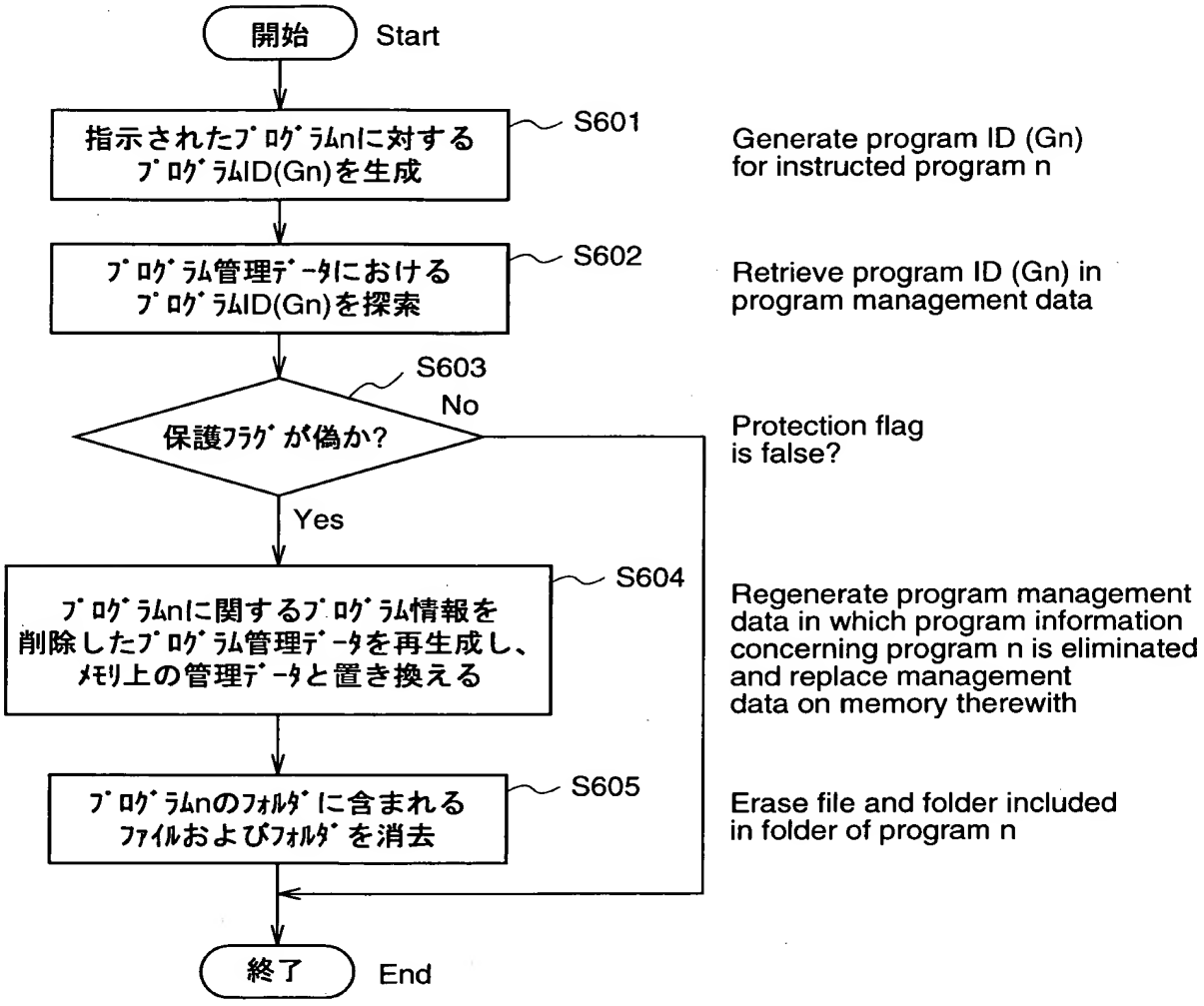
【図6】 Figure 6



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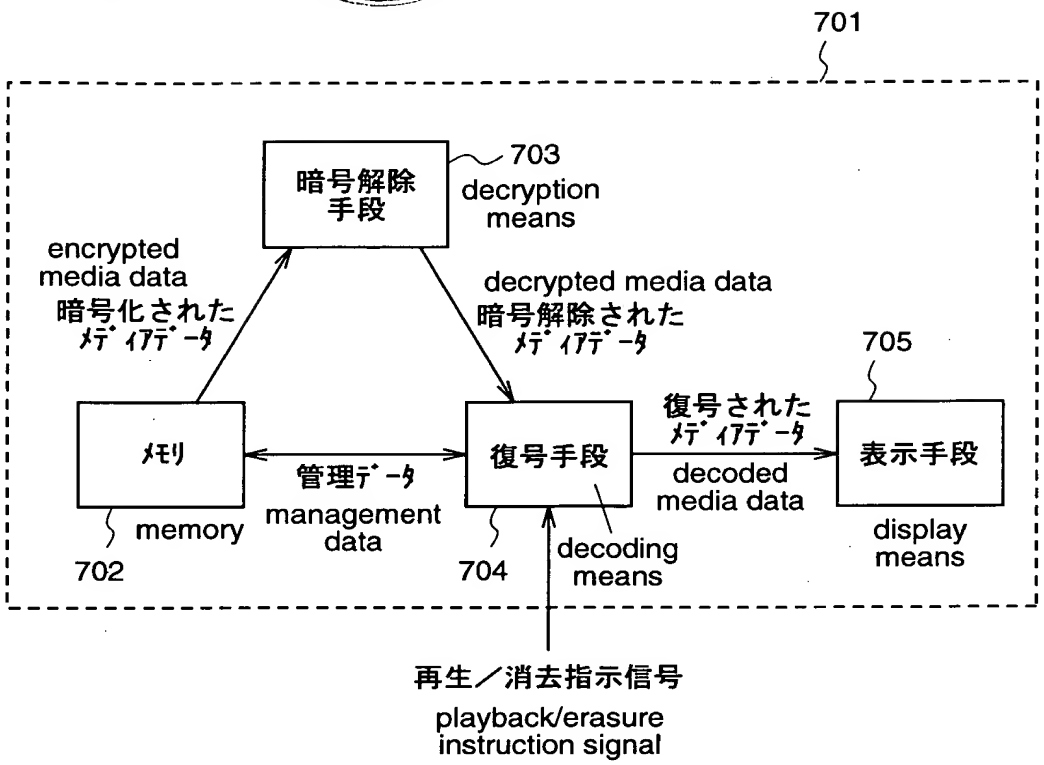
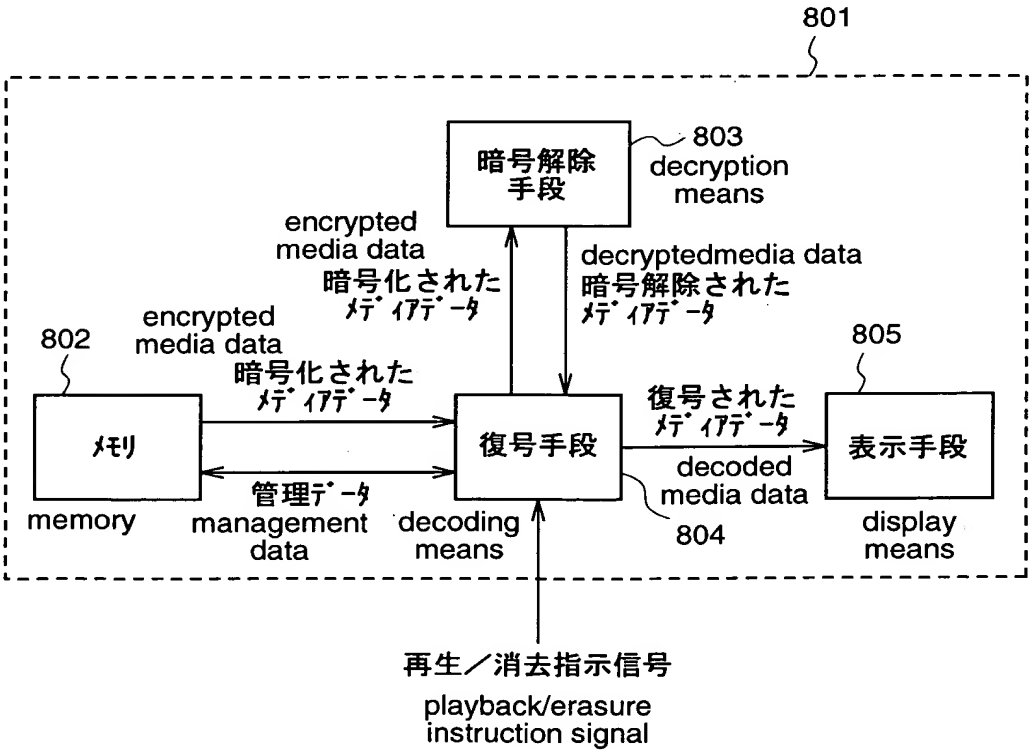
【図7】 Figure 7



【図8】 Figure 8



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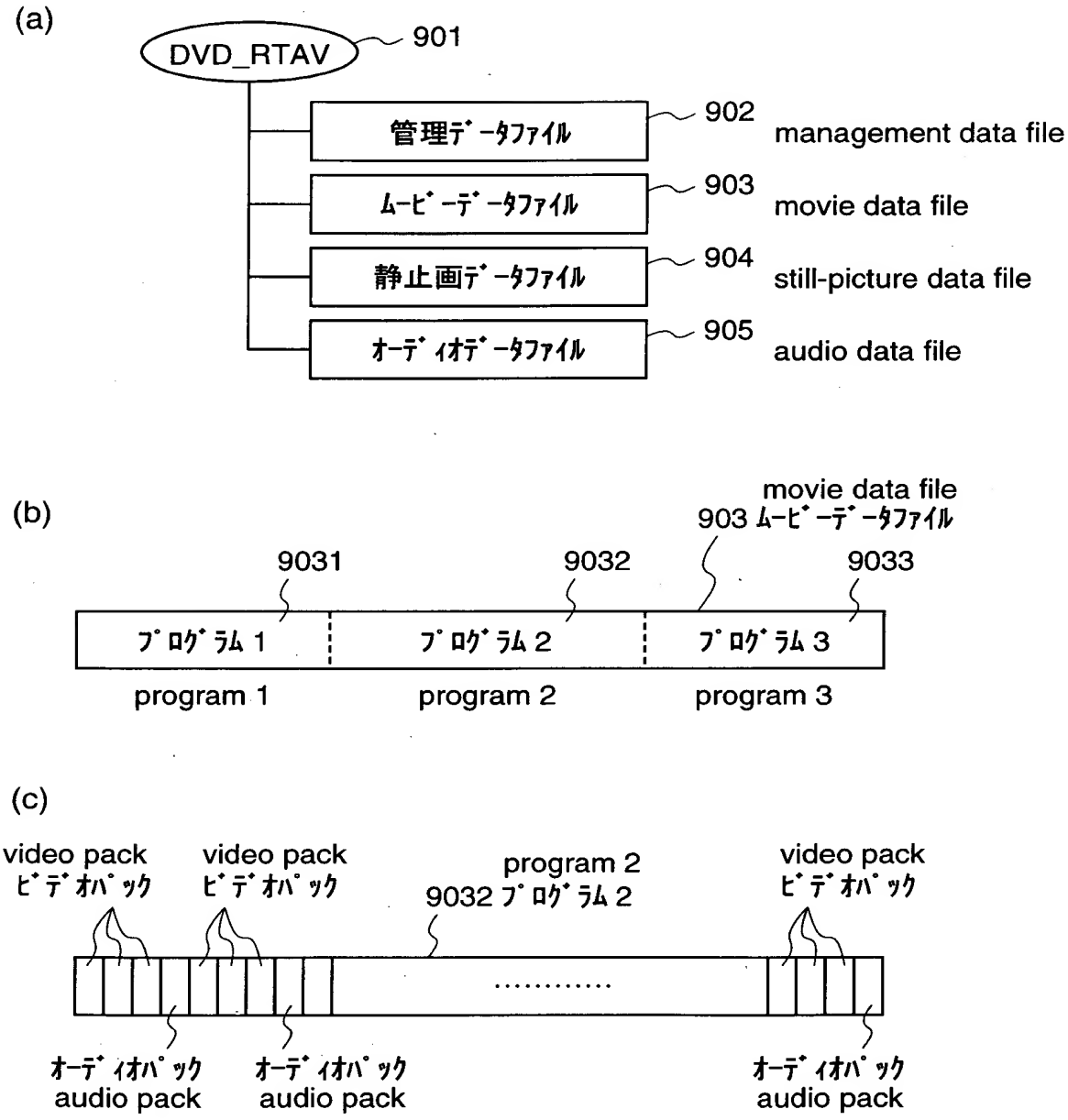
【図9】 Figure 9



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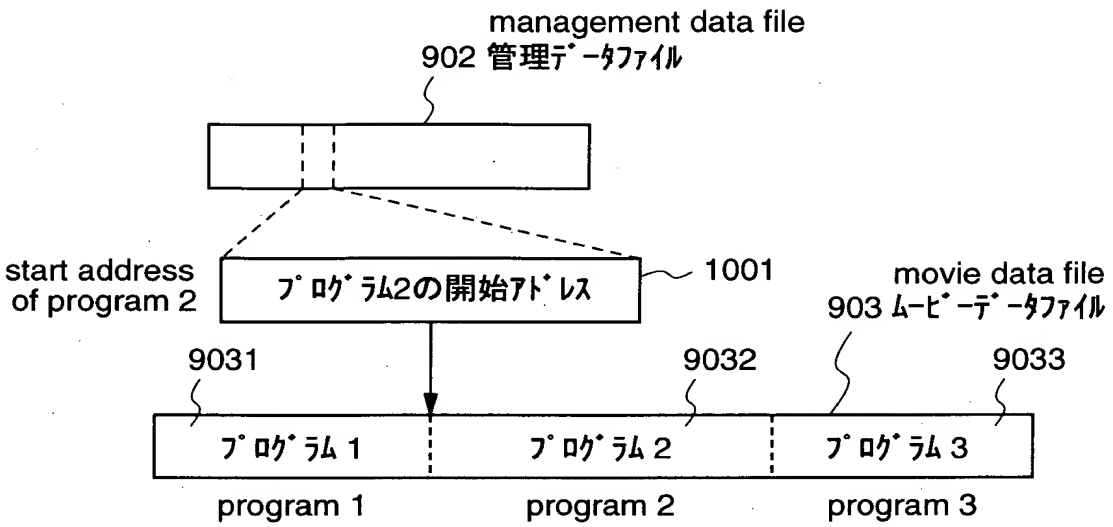
【図10】 Figure 10



【図11】 Figure 11